

Application Serial No. 10/562,516
Reply to Office Action of March 20, 2009

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PATENT
Docket: CU-4639

Amendments to the Claims

The listing of claims presented below replaces all prior versions, and listings, of claims in the application.

Listing of claims:

1 – 17. (Cancelled)

18. (Currently amended) A display device having a view angle control sheet being bonded to a liquid crystal display panel, wherein the view angle control sheet comprising comprises lens portions having trapezoidal shapes in cross section arranged at predetermined intervals, a wedge-shaped portion between the lens portions adjacent to each other is filled with the same material as that of the lens portions or with a material different from the lens portions, a base sheet on the liquid crystal display panel ~~a screen-image side~~ of the lens portions and the wedge-shaped portion, wherein a light from the liquid crystal display panel ~~the screen-image side~~ is the light with various angles, the wedge-shaped portion has a bottom surface on the liquid crystal display panel ~~screen-image side~~ while having a leading edge on an observer side with an outside light beam absorption effect, and the following relationship is held at least between a refractive index (N2) of a material constituting a slope portion of the wedge-shaped portion and a refractive index (N1) of a material constituting the lens portions:

$$N2 \leq N1$$

and when a ratio of the refractive indexes (N1) and (N2) is $N2/N1=R$, the following relationship is held further in the angle (θ) (degree) formed by the slope portion of the wedge-shaped portion and a normal line of the light beam outgoing plane:

$$-0.01 < R - \cos \theta < 0.002, \text{ and}$$

$$3 \leq \theta \leq 20.$$

19. (Cancelled)

20. (Currently amended) A display device ~~view-angle-control-sheet~~ according to claim 18, wherein the following relationship is held further between the refractive indexes (N1) and (N2):

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$$0.8N1 \leq N2 \leq 0.98N1$$

21. (Currently amended) A display device ~~view angle control sheet~~ according to claim 18, wherein a cross-sectional shape of the wedge-shaped portion is a substantial isosceles triangle.
22. (Currently amended) A display device ~~view angle control sheet~~ according to claim 18, wherein one of angles formed by two slopes of the wedge-shaped portion and the normal line of the light beam outgoing plane is larger than the other.
23. (Currently amended) A display device ~~view angle control sheet~~ according to claim 18, wherein the slope portion of the view angle control sheet has a curved cross-sectional shape or a polygonal-line cross-sectional shape such that the liquid crystal display panel ~~screen image~~ side differs from the observer side in an angle formed by the slope portion and an observer side surface.
24. (Currently amended) A display device ~~view angle control sheet~~ according to claim 18, wherein light beam absorption particles are added to the wedge-shaped portion.
25. (Currently amended) A display device ~~view angle control sheet~~ according to claim 24, wherein an average particle size of the light beam absorption particles is at least 1 μm and the average particle size is not more than two-thirds of a width of the bottom surface.
26. (Currently amended) A display device ~~view angle control sheet~~ according to claim 24, wherein an addition amount of the light beam absorption particle ranges from 10 to 50% by volume.
27. (Currently amended) A display device ~~view angle control sheet~~ according to claim 18, wherein a function of any one of anti-reflection (AR), anti-static (AS), anti-glaring (AG), and a touch sensor or a plurality of functions thereof are imparted to at least one surface side.

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28. (Cancelled).

29. (Currently amended) A display device according to claim 18, wherein ~~the~~ view angle control sheet ~~according to claim 18~~ is arranged in a crosswise stripe.

30. (Currently amended) A display device according to claim 18, wherein one view angle control sheet ~~according to claim 18~~ is laminated on the observer side of a ~~screen image source~~ the liquid crystal display panel or two view angle control sheets ~~according to claim 18~~ are laminated the observer side of the liquid crystal display panel ~~screen image source~~ while being substantially orthogonal to each other.

31. (Previously Presented) A display device according to claim 30, wherein the width of the bottom surface is not more than 1/1.5 of a size of one pixel.